

WHAT IS CLAIMED IS:

1 1. A vacuum grabber device for insertion into a body cavity via an insertion
2 device, the insertion device having a working channel extending therethrough from a
3 proximate end to a distal end thereof, the vacuum grabber device comprising:
4 a vacuum line slidable within the working channel, the vacuum line having a
5 distal end insertable in the insertion device;
6 a substantially transparent and airtight flexible cup attached to the distal end
7 of the vacuum line, the flexible cup being foldable to fit within the working channel
8 and, wherein when deployed from the working channel, the flexible cup is
9 expandable into a funnel having a maximum diameter greater than that of the
10 working channel; and
11 means for positioning the deployed flexible cup adjacent to a selected portion
12 of tissue within the body cavity.

1 2. The vacuum grabber device according to claim 1, further comprising means
2 for controlling a pressure within the vacuum line.

1 3. The vacuum grabber device according to claim 2, wherein, when the flexible
2 cup is positioned adjacent to the selected portion of tissue, a vacuum pressure is
3 introduced into the vacuum line by the pressure controlling means to draw the
4 selected portion of tissue into the flexible cup.

1 4. The vacuum grabber device according to claim 3, wherein, when the selected
2 portion of tissue is drawn in the flexible cup by the vacuum pressure, withdrawing
3 the vacuum line proximally through the working channel places the selected portion
4 of tissue into a desired operating position relative to the insertion device.

1 5. The vacuum grabber device according to claim 1, wherein the flexible cup is
2 formed of a clear flexible polymer.

1 6. The vacuum grabber device according to claim 5, wherein the clear flexible
2 polymer is a plasticized silicon.

1 7. The vacuum grabber device according to claim 1, wherein the maximum
2 diameter of the flexible cup is predetermined based on a size of the selected portion
3 of tissue, plus a safety margin portion of tissue.

1 8. The vacuum grabber device according to claim 1, further comprising a sample
2 catcher disposed between the flexible cup and the means for applying a vacuum.

1 9. The vacuum grabber device according to claim 8, wherein the sample catcher
2 is a mesh disposed in the vacuum line.

1 10. The vacuum grabber device according to claim 1, wherein the flexible cup is
2 biased so that, when not constrained within the working channel, the flexible cup
3 expands to a substantially funnel shaped configuration.

1 11. The vacuum grabber device according to claim 10, wherein the flexible cup
2 further comprises resilient elastic elements to bias the cup to the substantially funnel
3 shaped configuration.

1 12. The vacuum grabber device according to claim 1, wherein the pressure
2 applied by the pressure controlling means is variable.

1 13. The vacuum grabber device according to claim 12, wherein the pressure
2 controlling means may selectively provide one of a positive pressure and a vacuum.

1 14. The vacuum grabber device according to claim 1, wherein the flexible cup
2 comprises a membrane adapted to prevent contamination of the selected portion of
3 tissue drawn in the flexible cup.

1 15. The vacuum grabber device according to claim 1, wherein, when the flexible
2 cup is not constrained within the working channel, the body cavity is observable by a
3 vision device through the substantially transparent flexible cup.

1 16. A method for removing a selected portion of tissue from a surface of a body
2 cavity, comprising the steps of:
3 inserting into the body cavity an insertion device;
4 advancing through the insertion device a substantially transparent flexible cup
5 in a folded configuration within the insertion device;

6 deploying from the insertion device the flexible cup in a substantially funnel
7 shaped configuration;
8 visually positioning the deployed flexible cup adjacent to the selected portion
9 of tissue by observing the selected portion of tissue through the substantially
10 transparent flexible cup;
11 applying a vacuum pressure through the flexible cup to draw the selected
12 portion of tissue into the flexible cup; and
13 at least partially withdrawing the flexible cup proximally into the insertion
14 device to draw the selected portion of tissue into a desired position relative to the
15 insertion device.

1 17. The method according to claim 16, further comprising the step of cutting the
2 selected portion of tissue from the body cavity.

1 18. The method according to claim 16, wherein the insertion device comprises an
2 endoscope and wherein the step of visually positioning the deployed flexible cup
3 includes the sub steps of:

4 positioning the endoscope to view the selected portion of tissue; and
5 maneuvering the transparent flexible cup and observing the suspect area
6 through the substantially transparent flexible cup so that the suspect area and a
7 safety margin area surrounding the suspect area are substantially centered within
8 the transparent flexible cup.

1 19. The method according to claim 16, further comprising the step of, after

2 applying the vacuum pressure, providing a positive pressure to the flexible cup to at
3 least partially eject from the flexible cup the selected portion of tissue.

1 20. The method according to claim 16, further comprising the step of closing a
2 wound resulting from cutting the selected portion of tissue.

1 21. The method according to claim 20, wherein the wound is closed by stapling.

1 22. A vacuum grabber device for insertion into a body cavity via an insertion
2 device, the insertion device having a working channel extending therethrough from a
3 proximate end to a distal end thereof, the vacuum grabber device comprising:

4 a vacuum line slidable within the working channel, the vacuum line having a
5 distal end insertable in the insertion device;

6 a substantially transparent flexible cup attached to the distal end of the
7 vacuum line, the flexible cup being foldable to fit within the working channel and,
8 wherein when deployed from the working channel, the flexible cup is expandable
9 into a funnel; and

10 means for visually positioning the deployed flexible cup adjacent to a selected
11 portion of tissue within the body cavity, such that the body cavity is observable by a
12 vision device through the substantially transparent flexible cup.